

What is claimed is:

1. A zoom lens comprising:

a first lens unit having a negative refractive power; and  
an aperture stop disposed on an image side of the first lens  
unit,

5 wherein the first lens unit has, on a most object side, an  
optical element having a reflecting surface to fold a path of rays,  
and is fixed in a magnification change,

wherein a position of the aperture stop is fixed in reference  
to an image surface in the magnification change, and

10 wherein an ray-entering surface of the optical element has  
an aspherical surface concave toward an object side that exerts  
a weaker power for divergence at a position thereon farther from  
an optical axis.

2. A zoom lens according to claim 1, comprising a second lens  
unit having a positive refractive power disposed between the first  
lens unit and the aperture stop, wherein, in a magnification change  
from a wide-angle end to a telephoto end under a condition where  
5 an object point at an infinite distance is in focus, the second  
lens unit shifts only in one direction and satisfies the following  
condition:

$$0.45 < \log \gamma_B / \log \gamma < 0.85$$

where  $f_T$  is a focal length of an entire system of the zoom lens  
10 at the telephoto end,  $f_W$  is a focal length of the entire system  
of the zoom lens at the wide-angle end,  $\gamma = f_T/f_W$ , and  $\gamma_B$  is a  
magnification of the lens unit G2 at the telephoto end divided  
by a magnification of the lens unit G2 at the wide-angle end.

3. A zoom lens according to claim 2, comprising, in order from the aperture stop toward the image side, a third lens unit having a negative refractive power and a fourth lens unit having a positive refractive power, wherein the third lens unit and the fourth lens unit are arranged adjacent to one another, and, in a magnification change from the wide-angle end to the telephoto end under a condition where an object point at an infinite distance is in focus, a distance between the third lens unit and the fourth lens unit is smaller at the telephoto end than at the wide-angle end.

4. A zoom lens according to claim 3, wherein, in the magnification change from the wide-angle end to the telephoto end under the condition where the object point at an infinite distance is in focus, a position of the fourth lens unit is more image-side at the telephoto end than at the wide-angle end.

5. A zoom lens according to claim 1, comprising a lens unit that is disposed on an image side of the aperture stop and that performs focusing.

6. A zoom lens according to claim 1, comprising a lens unit that has a positive refractive power and that has an aspherical surface.

7. A zoom lens according to claim 1, comprising a lens unit that has a positive refractive power and that includes a cemented lens component.

8. A zoom lens according to claim 7, wherein the lens unit consists of the cemented lens component.

9. A zoom lens according to claim 1, satisfying the following condition:

$$0.45 < e/L < 1.2$$

where  $L$  is a diagonal length of an effective image pickup region  
5 of an image pickup element, and  $e$  is an equivalent length in air to a length measured along an optical axis from a ray-entering surface to a ray-exiting surface of the optical element.

10. A zoom lens according to claim 1, wherein the optical element is a prism and satisfies the following condition:

$$1.45 < n_{pri}$$

where  $n_{pri}$  is a refractive index for d-line rays of a medium of  
5 the prism.

11. A zoom lens according to claim 1, further comprising a second lens unit and satisfying the following condition:

$$0.85 < -\beta_{Rt} < 2.0$$

where  $\beta_{Rt}$  is a compound magnification of an optical system formed  
5 of the second lens unit and components arranged thereafter under a condition where an object at an infinite distance is in focus at a telephoto end.

12. A zoom lens according to claim 1, further comprising a second lens unit and a third lens unit and satisfying the following conditions:

$$0.2 < -M_3/M_2 < 0.75$$

5 where  $M_2$  is an amount of shift of the second lens unit in a  
magnification change from a wide-angle end to a telephoto end under  
a condition where an object point at an infinite distance is in  
focus, and  $M_3$  is an amount of shift of the third lens unit in a  
magnification change from the wide-angle end to the telephoto end  
10 under the condition where an object point at an infinite distance  
is in focus.

13. A zoom lens according to claim 1, further comprising a  
lens subunit and satisfying the following condition:

$$0 < f_{11}/f_{12} < 1.6$$

where  $f_{11}$  is a focal length of the prism in the first lens unit,  
5 and  $f_{12}$  is a focal length of the lens subunit.

14. A zoom lens according to claim 1, having an optical member  
or an optical thin film that satisfies the following conditions:

$$\tau_{600}/\tau_{550} \geq 0.8$$

$$\tau_{700}/\tau_{550} \leq 0.08$$

5 where  $\tau_{550}$  is a transmittance of the optical member or optical thin  
film at the wavelength 550nm,  $\tau_{600}$  is a transmittance of the optical  
member or optical thin film at the wavelength 600nm, and  $\tau_{700}$  is  
a transmittance of the optical member or optical thin film at the  
wavelength 700nm.

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15. A zoom lens according to claim 1, having an optical member  
or an optical thin film that satisfies the following conditions:

$$\tau_{400}/\tau_{550} \leq 0.08$$

$$\tau_{440}/\tau_{550} \geq 0.4$$

5     where  $\tau_{400}$  is a transmittance of the optical member or optical thin  
film at the wavelength 400nm,  $\tau_{440}$  is a transmittance of the optical  
member or optical thin film at the wavelength 440nm, and  $\tau_{550}$  is  
a transmittance of the optical member or optical thin film at the  
wavelength 550nm.

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16. A zoom lens according to claim 1, wherein the zoom lens  
forms an object image on an electronic image pickup element  
arranged on the image surface, has at least one optical lowpass  
filter, and satisfies the following conditions:

5                     when  $a < 4\mu m$ ,  $0.08a < t_{LPF} < 0.16a$

                   when  $a < 3\mu m$ ,  $0.075a < t_{LPF} < 0.15a$

where  $a$ , in micrometers, is a horizontal pixel pitch of the  
electronic image pickup element, and  $t_{LPF}$ , in millimeters, is a  
thickness of a thickest optical lowpass filter having one crystal  
10     axis that forms an angle with the optical axis of the zoom lens  
in a range from 35 deg. to 55 deg., as measured along the optical  
axis.

17. A zoom lens according to claim 3, wherein the third lens  
unit has a fixedly positioned lens component and a shifting lens  
component in a magnification change from a wide-angle end to a  
telephoto end.

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18. A zoom lens according to claim 1, wherein the optical  
element is a prism.